

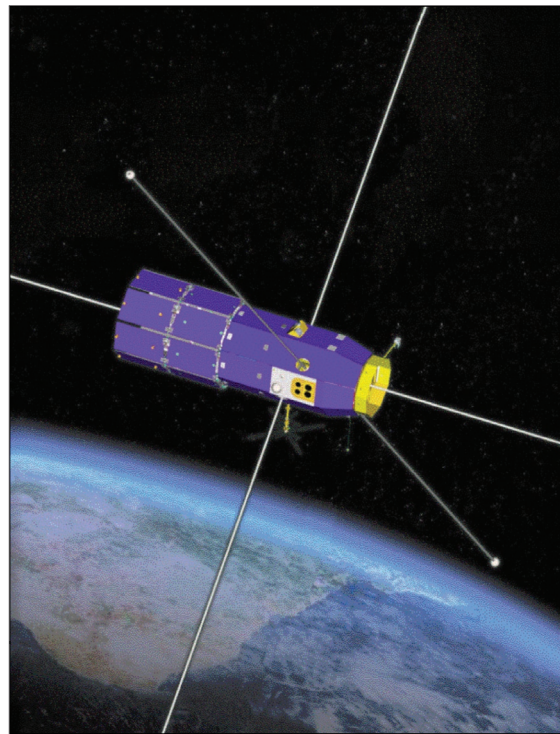


# Air Force Research Laboratory|AFRL

*Science and Technology for Tomorrow's Air and Space Force*

## **Success Story**

### **COMMUNICATION/NAVIGATION OUTAGE FORECASTING SYSTEM**



The Communication/Navigation Outage Forecasting System (C/NOFS) instrument payload will make global equatorial measurements to understand and forecast naturally occurring ionospheric scintillation that causes outages in communication and navigation data links. The C/NOFS program will sense and predict system-outages caused by scintillation to improve the warfighter's capability to perform mission-essential communication and navigation tasks. C/NOFS combines data from space- and ground-based sensors in advanced computer models to predict ultra-high frequency satellite communications and Global Positioning System (GPS) outages due to scintillation in the ionosphere.



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### **Accomplishment**

The Instrument Development Team, composed of the Space Vehicles Directorate, the Naval Research Laboratory, the National Aeronautics and Space Administration's Goddard Space Flight Center, Aerospace, and the University of Texas at Dallas, recently fabricated the C/NOFS flight hardware for the space-based instrument payload. They delivered the first instrument flight unit to the directorate's Aerospace Engineering Facility at Kirtland Air Force Base, New Mexico for integrated payload testing.

The flight hardware for the six C/NOFS instruments includes the Electric Field Instrument, the Planar Langmuir Probe, the Ion Velocity Meter, the Neutral Wind Meter, the GPS Occultation Receiver, and the Radio Frequency Beacon.

### **Background**

The team designed and fabricated the instruments to fly on a low-altitude, low-inclination satellite and make in-situ and remote sensing measurements of the equatorial ionosphere. The C/NOFS payload is very unique because it is the first dedicated instrument suite to measure the key ionospheric parameters needed to answer the question "What triggers scintillation?"

The C/NOFS payload will also demonstrate a new data-driven, physics-based forecasting system for predicting when and where scintillation events will disrupt communication and navigation data links. Following integrated payload testing, the team will transfer the instruments to the Space and Missile Center's Detachment 12 and the spacecraft contractor for integration onto the spacecraft bus.

Space Vehicles  
Support to the Warfighter

### **Additional information**

To receive more information about this or other activities in the Air Force Research Laboratory, contact TECH CONNECT, AFRL/XPTC, (800) 203-6451 and you will be directed to the appropriate laboratory expert. (03-VS-04)